

## **REMARKS**

Reconsideration of the present application is respectfully requested. Claims 1-65 were originally presented. Claims 50-65 have been withdrawn as being drawn to a non-elected invention and claims 7, 18, 22, 23, and 32 have been canceled, so that claims 1-6, 8-17, 19-21, 24-31, 33-49, and 66-81 are currently pending. Claims 1, 38, and 74 are in independent form.

Applicants wish to thank the Examiner for the in-person interview courteously granted by the Examiner on November 30, 2006. In the interview, the rejections under 35 U.S.C. §103 were discussed and the patentability of independent claims 1, 38, and 74 was argued. As indicated in the interview, Applicants will now reiterate and expand upon the arguments presented in the interview.

In the Office Action of October 30, 2006, the Examiner rejected claims 1-6, 8-12, 14-17, 19-21, 24-31, 33-49, 66-71, 74-76, and 78-81 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,366,614 to Russ et al. (hereinafter, Russ) in view of U.S. Patent No. 6,254,766 B1 to Sughrue et al. (hereinafter, Sughrue). In the rejection, the Examiner stated that it would have been obvious to modify the process of Russ by utilizing the sorbent taught by Sughrue in place of the sorbent of Russ. *See* Office Action, p. 5, ll. 4-6. The Examiner further states that “[o]ne would necessarily use the regeneration and reactivation procedure that is effective for the sorbent of Sughrue.” Office Action, p. 5, ll. 7 and 8.

In the interview, Applicants expanded upon the arguments presented in Applicants’ response to the Office Action of April 7, 2006. First, Applicants reiterated that independent claims 1, 38, and 74 recite a regeneration step (b), where a solid particulate system is contacted with an oxygen-containing regeneration stream in a regeneration zone under regeneration conditions. Step (a) of claims 1, 38, and 74 clearly defines the solid particulate system as comprising *both* a sorbent and a catalyst. Therefore, step (b) of claims 1, 38, and 74 requires the collective regeneration of both a sorbent and a catalyst in a common regeneration zone. Further, Applicants reminded the Examiner that to establish a *prima facie* case of obviousness based on a multiple prior art references, the proposed combination must teach or suggest all of the claim limitations. MPEP §2143.

In general, Russ discloses a process for precluding sulfur to a reforming zone in order to achieve higher reforming catalyst stability. Russ teaches a first reforming zone 13 that “contains a mixture of reforming catalyst and sorbent.” Col. 4, ll. 29 and 30. The first reforming zone 13 utilizes the catalyst/sorbent mixture to convert “substantially all of the sulfur in the feed to  $H_2S$  while effecting reforming.” Col. 4, ll. 31-33. The resulting  $H_2S$ -rich hydrocarbon stream passes through a sulfur removal zone 17, where “[s]ulfur entering this zone as  $H_2S$  is removed from the process by a sulfur sorbent [and exits sulfur removal zone 17 via conduit 18] in combination with spent sorbent.” Col. 4, ll. 40-43. The resulting “substantially sulfur-free” hydrocarbon stream exits sulfur removal zone 17 and enters a second reforming zone 22, wherein it contacts the highly sulfur-sensitive reforming catalyst and undergoes further reforming reactions to thereby produce an aromatics-rich hydrocarbon effluent. Col. 4, ll. 44-51 and col. 6, l. 37.

In the interview, Applicants reiterated that Russ *only* teaches regeneration of catalyst. According to Russ, the physical mixture of catalyst and sorbent in the first reforming zone 13 is separated prior to regenerating the catalyst: “[T]he [catalyst and sorbent] particles preferably are of different size and/or density for *ease of separation for purposes of regeneration or rejuvenation* following their use in hydrocarbon processing.” Col. 6, ll. 53-57 (emphasis added). Further, Russ states that the catalyst may be regenerated according to any “*catalyst-regeneration* options known to those of ordinary skill in the art” and then discloses several common catalyst regeneration options. Col. 9, ll. 25-46 (emphasis added). Clearly, Russ *only* teaches the regeneration of catalyst particles and does *not* disclose the regeneration of a particulate system comprising catalyst and sorbent. Therefore, because Russ teaches the separation of sorbent and catalyst prior to catalyst regeneration, the substitution of the sorbent of Sughrue into the process of Russ as suggested by the Examiner would still not teach the collective regeneration of sorbent and catalyst in a common regeneration zone. Rather, substituting Sughrue’s sorbent into Russ’s process would teach the regeneration of catalyst and sorbent in *separate* regeneration zones. Thus, Applicants submit the Examiner’s proposed combination of Russ and Sughrue fails to disclose all of the claim limitations of independent claims 1, 38, and 74. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 1-6, 8-12, 14-17, 19-21, 24-31, 33-49, 66-71, 74-76, and 78-81 under 35 U.S.C. §103(a).

In the interview, Applicants argued that Russ did not disclose contacting a hydrocarbon-containing fluid stream comprising greater than about 50 ppmw sulfur with a solid particulate system comprising sorbent and catalyst as required by independent claim 74. Rather, Applicants asserted that Russ teaches away from a hydrocarbon feed stream with a sulfur content greater than about 10 ppm because such high sulfur feeds cause deactivation of the highly sulfur-intolerant reforming catalyst. According to Russ, in order to successfully “preclude sulfur from the feed to the dehydrocyclization [i.e., reforming] catalyst,” the “hydrocarbon feedstock to the [first reforming zone of] the present process contains small amounts of sulfur compounds, amounting to generally *less than 10 parts per million* (ppm).” Col. 5, ll. 3-5 and col. 6, ll. 64 and 65. If the hydrocarbon feedstock comprises greater than about 10 ppm, Russ teaches pretreating the high sulfur feedstock “by a conventional pretreating step such as hydrotreating, hydrorefining, or hydrodesulfurization.” Col. 5, ll. 7-9. The pretreating step should “provide the first reforming catalyst [zone] with a hydrocarbon feedstock having low sulfur levels disclosed in the prior art as desirable for reforming feedstocks, e.g., 1 ppm to 0.1 ppm (100 ppb [part per billion]).” Col. 5, ll. 60-63. Clearly, Russ teaches away from utilizing a hydrocarbon-containing fluid stream comprising greater than about 50 ppmw sulfur in its desulfurization process. Therefore, Applicants submit that all of the claim limitations of independent claim 74 are not disclosed by Russ, Sughrue, or their combination. Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejection of claims 74-76 and 78-81 under 35 U.S.C. §103(a).

In the Office Action of October 30, 2006, the Examiner stated, “Applicant’s arguments filed on 8/7/2006 have been fully considered but they are not persuasive.” P. 7, ll. 8 and 9. In support of this view, the Examiner seems to interpret the arguments in the Applicants’ previous response as individually attacking Russ and/or Sughrue and states, “One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In Re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).” Office Action, p. 7, ll. 12-15. In further support of the view that Applicants’ arguments are not persuasive, the Examiner is apparently interpreting the separation of catalyst and sorbent taught by Russ as being a preferred embodiment and states, “preferred embodiments and

disclose [sic] examples do not constitute teaching away from a broader disclosure or nonpreferred embodiments (see *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807 (fed. [sic] Cir. 1989)).” Office Action, p. 7, ll. 18-20. Applicants submit that the Examiner has misinterpreted Applicants’ arguments and has misapplied the cases of *In re Keller*, *In re Merck & Co.*, and *Merck & Co. v. Biocraft Labs.*

Both *In re Keller* and *In re Merck & Co.* apply to situations where the appellants had improperly tried to argue against an obviousness rejection based on multiple references by addressing *only one prior art reference individually*. In *In re Keller*, the appellant had filed an affidavit to rebut an obviousness rejection during prosecution. However, the affidavit addressed only *one* of the four cited prior art references and no other evidence was provided to support the appellant’s rebuttal argument. 642 F.2d 413, 208 USPQ 871, 879. Similarly, in *In re Merck & Co.*, appellants attempted to overcome an obviousness rejection based on nine references by arguing that *one* of the references taught away from the proposed combination. 800 F.2d 1091, 231 USPQ 375, 377, 380. In contrast to both of these cases, Applicants are *not* attacking only one of the cited prior art references of record. Rather, as discussed above, Applicants argue that the Examiner’s proposed *combination* of Russ and Sughrue fail to teach all of the claim limitations of independent claims 1, 38, and 74.

In *Merck v. Biocraft Labs.*, the Court found the patent at issue invalid because a prior patent had disclosed the specific embodiment claimed in the patent at issue. Merck held both the prior patent and the patent at issue and argued that because the prior patent disclosed over 1200 possible embodiments (of which, the claimed composition was not a preferred or highlighted embodiment), selecting the claimed embodiment in the patent at issue would require an inappropriate ‘obvious to try’ standard. The Court disagreed and stated that the “multitude of effective combinations does not render any particular formulation less obvious,” especially “because the claimed composition [in the patent at issue] is used for the identical purpose taught by the prior art.” *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807 (Fed. Cir. 1989). Thus, the Court found that the non-preferred embodiment *disclosed* by Merck in its prior patent had rendered the claims of its patent at issue obvious.

In the Office Action, the Examiner has apparently taken the position that collectively regenerating sorbent and catalyst is a “nonpreferred embodiment” of Russ. P. 7, ll. 16-20. However, as discussed in detail above, Applicants assert that regenerating a particulate

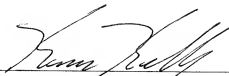
system comprising both catalyst and sorbent is *nowhere taught or suggested in Russ*. Therefore, collective regeneration of a particulate system comprising a catalyst and a sorbent is not a preferred *or* a non-preferred embodiment of Russ. Thus, Applicants submit that the Examiner has misinterpreted the Applicants' arguments and misapplied the case law in support of the improper rejection under 35 U.S.C. §103(a). Accordingly, Applicants respectfully request the reconsideration and withdrawal of the rejections of claims 1-6, 8-12, 14-17, 19-21, 24-31, 33-49, 66-71, 74-76, and 78-81 under 35 U.S.C. §103(a).

In light of the foregoing, Applicants submit that independent claims 1, 38, and 74 are patentable over the prior art references of record. Claims 2-6, 8-17, 19-21, 24-31, 33-37, 66, 68, 70, and 72 depend from independent claim 1; claims 39-49, 67, 69, 71, and 73 depend from independent claim 38; and claims 75-81 depend from independent claim 74. These dependent claims recite additional patentable features and should also be allowable as being based on allowable independent claims.

Applicants submit that the present application should now be in condition for allowance and such allowance is respectfully requested. Should the Examiner have any questions, please contact the undersigned at (800) 445-3460. The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 19-0522.

Respectfully submitted,  
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